CLAIMS

1. An organic light-light conversion device comprising:

a light sensing unit having a layer including a photo-conductive organic semiconductor that causes a photo-current multiplication phenomenon by light irradiation, and

a light emitting unit having a layer including an electroluminescent organic semiconductor that emits light by current injection, characterized in that

at least one of the photo-conductive organic semiconductor and the electroluminescent organic semiconductor is a polymer semiconductor.

2. The organic light-light conversion device according to claim 1, wherein the photo-conductive organic semiconductor is a polymer semiconductor.

3. The organic light-light conversion device according to claim 1, wherein the electroluminescent organic semiconductor is a polymer semiconductor.

4. The organic light-light conversion device according to any one of claims 1 to 3, wherein the photo-conductive organic semiconductor and the electroluminescent organic semiconductor are polymer semiconductors.

5. The organic light-light conversion device according to any one of claims 1 to 4, comprising:

a) a light sensing unit having a layer

including the photo-conductive organic semiconductor,

b) a light emitting unit having a layer including the electroluminescent organic semiconductor placed on a different location from the light sensing unit on the same substrate, and

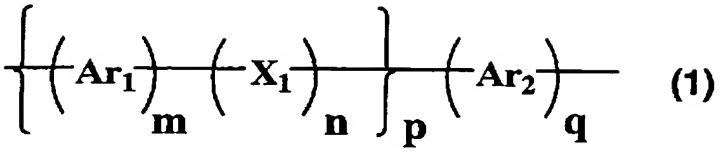
c) a conductive layer connecting the light sensing unit to the light emitting unit laid on the same substrate.

6. The organic light-light conversion device according to claim 5, wherein a light shielding member is provided between the light sensing unit and light emitting unit.

7. The organic light-light conversion device according to claim 5, wherein a translucent member having a transmittance that suppresses but does not completely shield the flow of feedback light into the light sensing unit is provided between the light sensing unit and the light emitting unit.

8. The organic light-light conversion device according to any one of claims 1 to 4, wherein the light sensing unit having a layer including the photo-conductive organic semiconductor is integrally laminated with the light emitting unit having a layer including the electroluminescent organic semiconductor.

9. The organic light-light conversion device according to any one of claims 1 to 8, wherein the polymer semiconductor contains one or more repeating units represented by the following Formula (1):



(1)

wherein Ar_1 and Ar_2 each independently represent an arylene group or a divalent heterocyclic group; X_1 represents $-CR_1=CR_2-$, $-C\equiv C-$ or $-N(R_3)-$; R_1 and R_2 each independently represent a hydrogen atom, an alkyl group, an aryl group, a monovalent heterocyclic group, a carboxyl group, a substituted carboxyl group or a cyano group; R_3 represents a hydrogen atom, an alkyl group, an aryl group, a monovalent heterocyclic group, an arylalkyl group or a substituted amino group; m, n and q each independently represent an integer of 0 or 1; p represents an integer of 0 to 2; and m + n and p + q are each 1 or more, provided that Ar_1, X_1, R_1, R_2 and R_3, if they are each multiple, can be respectively identical or different, and has a polystyrene-converted number average molecular weight of 1×10^3 to 1×10^8.

10. The organic light-light conversion device according to any one of claims 1 to 9, wherein the layer including the photo-conductive organic semiconductor and/or the layer including the electroluminescent organic semiconductor contains two or more polymer semiconductors containing one or more repeating units represented by Formula (1).

11. An image intensifier characterized by

comprising a plurality of the organic light-light conversion devices according to any one of claims 1 to 10 arranged.

12. A light sensor characterized by comprising the organic light-light conversion device according to any one of claims 1 to 10, and a means to measure and output a voltage applied to both ends of the layer including the electroluminescent organic semiconductor.